use different renderings of the same name, and one at least of them has no consistent system. Thus, one island appears as Meshdoshapsk in the map and text, and as Meshdusharsky in the appendix; the name of a well-known Russian geologist appears as Chernysheff and Tscherneyschew (p. 288); the letters, which are translitered (p. 266) as "aya" in the case of Novaya, are abridged to "a" in the name Dolgaya, which therefore appears as Dolga. Belootchia and Belushja are no doubt renderings of the same word. But nomenclature is after all a matter of detail, and Mr. Pearson and Colonel Feilden are to be congratulated on a valuable contribution to the natural history of one of the least known regions of Europe. J. W. G.

INTERNATIONAL COMMITTEE OF WEIGHTS AND MEASURES.[1]

THE International Committee of Weights and Measures at Paris issue from time to time "Travaux et Mémoires" with reference to the investigations and comparisons undertaken at their Bureau during certain periods. Ten such volumes have been published since 1881—Tome i. to Tome xi.—and during last year a further volume, Tome ix., was distributed. This latter volume contains the final account by Dr. J. René Benoit and Dr. Max Thiesen of the comparisons made at the Bureau of forty standard kilograms, "Prototypes nationaux" with the "Prototype International K," which is kept at the Bureau. These national standard kilograms have long since been forwarded by the Committee to the several High Contracting States who (including Great Britain) have joined the Metric Convention of 1875; and the introductory account of the comparisons of these standards was given in Tome viii. (1893), the final account having only now been issued, although it deals with comparisons made so far back as 1884.

The unit of mass of the kilogram is determined by a solid piece of metal, iridio-platinum, in the form of a cylinder (of the height and diameter of 30 millimetres), and the comparisons of the forty cylinders included weighings in air and in water; the numerous observations made by Dr. Thiesen being stated in detail in Tome ix., the observations and reductions of the hydrostatic weighings alone occupying 229 pages of this large volume. The balances used were made by M. Bunge, of Hamburg (1879), and more recently by Messrs. A. Ruprecht and H. Schoss, of Vienna. Of the Bunge Balance an illustrated description is given in Tome ix., and of the original Ruprecht Balance in Tome i. of "Le Travaux et Mémoires." The balances were so designed that any two kilograms under comparison could be automatically interchanged from one side of the balance to the other without disturbing the balance-case, and any minute weights could be added to either pan by the observer without approaching the case. The results appear to have been highly satisfactory, the probable error of a final comparison of two kilograms not exceeding 0·002 mg. Such comparisons are inexhaustible, and therefore it is not surprising to find that no two of the kilograms were found to be absolutely alike.

The final density of the standard kilogram, No. 18, forwarded to Great Britain, appears to have been 21·5454, corresponding to a volume 0° C of 46·414 millilitres. The actual difference of No. 18 from the true kilogram was found to be:—No. 18 = K + 0·070 mg.

By the Weights and Measures (Metric System) Act, 1897, it is provided that "No. 18" is to be the legal standard of this country, from which all other metric weights and all measures having reference to weight are ascertained; and its precise equivalent in terms of the pound avoirdupois has been found to be 2·20462234 lb., or the pound equals 0·45359243 kg.

The investigations of this Bureau as to modes of weighing and methods of reduction, have attracted the attention of all engaged in exact metrological inquiry, the results of the investigations being referred to in modern text-books on physical science; and in the present volume the several corrections and reductions found to be necessary in the precise weighings made by Dr. Thiesen during the years 1884-8 are fully stated in his excellent account.

NOTES.

THE poll for the election of a Parliamentary representative of the University of London, in succession to Sir John Lubbock, opened on Tuesday morning, and will close on Saturday. The result will be declared at the University on Monday next, at noon. On Tuesday evening the number of votes recorded for each of the candidates was officially declared to be: Sir Michael Foster 255, Dr. Collins 156, and Mr. Busk 119, and we trust that when the poll is declared next Monday the numbers will be of the same relative order of magnitude. Graduates of a University which promises to become in the near future an even more powerful means of promoting scientific interests and encouraging intellectual activities than it has been in the past, should see for themselves that the return of any other candidate than Sir Michael Foster would be disastrous. It is unfortunate that sharp electioneering practice induced a number of the graduates to give their names as supporters of Mr. Busk and Dr. Collins before Sir Michael Foster entered the lists; but if they have the courage of their convictions they will seriously consider whether a promise made without a knowledge of the candidates who would contest the seat should not be withdrawn. Petty differences of opinion and individual grievances ought to be put on one side upon an occasion like the present, and the electors should vote for the candidate who would have the greatest influence upon the advancement of the University as a whole.

SOME weeks ago we expressed surprise that the Highland Agricultural Society of Scotland had not contributed towards the cost of Prof. Ewart's experiments on telegony and other subjects of special interest to breeders. From a contemporary we learn that the Society last week voted 200*l.* in aid of the very costly investigations, and that the former chairman (Sir John Gilmour), in a letter urging the secretary to make a grant, stated that he intended sending a donation of 50*l.*, and expressed the hope that others would follow his example. As there was some danger of the work collapsing for want of funds, this is altogether satisfactory. Though science in the past, to the great loss of the nation, has too often been systematically ignored, better times may be coming, for the new century may bring with it a higher appreciation of scientific methods, and thus keep us abreast with the spirit of the age.

IN his lecture at the Royal Institution on Friday last, Mr. Marconi made a statement as to the use of his system of wireless telegraphy in connection with the war. He is reported by the *Times* to have said that six of his assistants have been sent out to South Africa. The War Office intended that the wireless telegraph should only be used at the base and on the railways; but the officers on the spot, realising it could only be of practical use at the front, asked if the assistants were willing to go to the front, and accordingly on December 11 they moved up to De Aar. The results at first were not altogether satisfactory, owing to the want of poles, kites, or balloons, which are needed to elevate the vertical wires; but the difficulty was overcome by the manufacture of kites, in which work Major Baden-Powell and Captain Kennedy, R.E., took part. It has been reported that the difficulty was due to the iron in the hills, but, as a matter of fact, iron has no more destructive effect on these Hertzian waves than any other metal, and Mr. Marconi has been able to transmit messages across the high buildings of New York, the upper stories of which are iron. However, when kites were provided, it was easy to communicate from De Aar to Orange River—some 70 miles—and now there are stations at Modder River, Enslin, Belmont, Orange River, and De Aar. Two of the assistants volunteered to take instruments through the Boer lines to Kimberley, but the military authorities would not grant them permission, as probably too great risk was involved. It seemed to Mr. Marconi regrettable that installations were not established in Ladysmith, Mafeking, and Kimberley before the commencement of hostilities, but he found it hard to believe that the Boers had any workable instruments. Some intended for them, which were seized at Cape Town, were of German manufacture, and not workable, and Mr. Marconi said that as he had supplied no apparatus to any one, the Boers could not possibly have any of his instruments. In conclusion, he said he did not like to dwell on what might be done in the immediate or distant future. But he was sure that the progress made this year would greatly surpass what had been accomplished during the last twelve months, and, speaking what he believed to be sober sense, he said that by means of wireless telegraphy telegrams would become as common and as much in daily use on the sea as they are at present on the land.

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[1] "Travaux et Mémoires du Bureau International des poids et mesures." (Paris, 1898.)

THE Government have placed a number of commissions in the army at the disposal of the Chancellors of all the British and Irish Universities, and some of the Colleges of University rank.

THE Turin Academy of Sciences has awarded the Bressa prize of 10,000 lire (400*l.*), for the best scientific work published during the past four years, to Prof. Ernst Haeckel, of Jena.

PROF. MITTAG-LEFFLER has been elected a correspondant of the Paris Academy of Sciences in the section of geometry, and M. Bienaymé has been elected a correspondant in the section of geography and navigation.

THE two candidates whose names have been submitted to the Minister of Public Instruction by the Paris Academy of Sciences for the chair of comparative embryology at the College de France, are M. Henneguy and M. Roule, the former occupying the first place.

PROF. RÖNTGEN, who has accepted the call to the University of Munich, has been appointed director of the State institute of physics and metrology.

ANNOUNCEMENT is made in the *London Gazette* that, after the expiration of forty days from February 6, it is proposed to submit to Her Majesty in Council the draft of an Order in Council providing that acetylene, when in admixture with atmospheric air or with oxygen, shall be deemed to be an explosive within the meaning of the Explosives Act, 1875, and that it shall not be manufactured, imported, kept, conveyed, or sold.

THE New York correspondent of the *Times* announces that the British Ambassador and the Secretary of State signed the new Nicaragua Canal Convention on Monday, and it will be sent to the Senate at once for ratification. In connection with the Convention, England asks for nothing for her concession of the right of objection to the canal. Both nations treat the matter as of deep importance to the whole world. The canal is to be neutral. The United States will build and manage it, but their position will be much the same as that of England in reference to the Suez Canal.

THE sixty-eighth annual meeting of the British Medical Association will be held at Ipswich on July 31–August 3. The president-elect is Dr. W. A. Elliston. An address in medicine will be delivered by Dr. P. H. Pye-Smith, F.R.S., and one in surgery by Mr. F. Treves. The scientific business of the meeting will be conducted in thirteen sections as usual.

THE *British Medical Journal* states that the sum of 98,000 dollars left by Mrs. C. B. Croft for the furtherance of the systematic study of cancer has now been paid to the Harvard University, and will be administered by the Department of Surgery of the Medical School of that University. Dr. E. H. Nichols has been appointed to an office under the trust, and will shortly visit English and continental laboratories for the purpose of investigating the work now being done in them.

THROUGH the enterprise of Prof. Conway M'Millan, a Botanical Art Gallery has been commenced during the past season in connection with the University of Minnesota. It consists of a collection of photographs from nature intended to illustrate the flora of the State, and is at present limited to portraits of the plants themselves in their habitats, and ecological groups.

LARGELY through the exertions of Mr. Thomas Meehan, we learn from the *Botanical Gazette*, the City of Philadelphia has acquired the dwelling and a part of the grounds which belonged to James Logan, one of the founders, along with William Penn, of the State of Pennsylvania. Logan was a distinguished botanist, the genus *Logania* (and natural order Loganiaceæ) having been named after him. The property will be known as Stenton Park.

THE Herbarium of the New York Botanic Gardens has acquired a collection of plants made in the Yukon Territory by Mr. R. S. Williams, which is believed to be the first made in the Klondike region.

FOUR botanical organisations will meet in New York during the last week in June:—the Botanical Society of America, the Botanical Section of the American Association for the advancement of Science, the Botanical Club of the same Association, and the Society for Plant Physiology and Morphology.

ON Friday last Mr. William Whitaker, F.R.S., President of the Geological Society, was elected President of the Geologists' Association. Never before have the two presidential chairs been occupied by the same individual. It is announced also that the ex-President of the Geologists' Association, Mr. J. J. H. Teall, F.R.S., is the President-elect of the Geological Society.

THE replies which the Duke of Devonshire and Mr. Ritchie gave to the deputation which waited upon them on Monday, to present a memorial asking for the continued maintenance of the Buckland Museum of Economic Fish Culture, were as satisfactory as could be expected. The deputation had two main objects; first, to ask that the museum should be permitted to remain where it is now, in the Victoria and Albert Museum at South Kensington; and next, that it should be placed under the Fishery Department of the Board of Trade. With regard to the first point, the Committee appointed by the Treasury, and the more recent Select Committee of the House of Commons, reported against the retention of the museum in its present position. There is no question as to the value of the collection—the only doubt is whether it is rightly situated; and in replying to the deputation, the Duke of Devonshire expressed the opinion that a change of position would be desirable. The place in which the museum is situated is, however, not such an important consideration as the means for keeping it in good condition, adding to it from time to time, and making it a scientific laboratory in which experimental pisciculture can be systematically carried on. At present no such funds are available; for, as the Duke of Devonshire frankly remarked, "It has not been thought necessary for the Government to do so much for the fishing industry of England as is done by a great many foreign countries, notably by the United States, or even as much as is done for Irish and Scotch Fisheries." If the Treasury will provide the means by which the museum may be properly housed at South Kensington or elsewhere, Mr. Ritchie said the Board of Trade would undertake the working of it. The interests of science will be served if, in whatever changes are made, it is borne in mind that "the museum is not for the purpose of exhibiting models, or attracting the attention of the curious, but a means to an end, the end being proper investigation and research into the habits of fish, and other matters, with a view to developing the industry in the way it ought to be developed."

WE learn from the *Lancet* that the president of the Board of Agriculture has appointed a departmental committee to inquire and report as to what regulations may be made by the Board in regard to the standards of quality of milk and cream. The difficulty in connection with proceedings taken under the Sale of Food and Drugs Act has been to differentiate exactly between abnormal milk, or milk which has been watered or from which cream has been abstracted. It is to be hoped that the long-vexed question of what is and what is not genuine milk or cream may be decided by this committee by recommending a system of fair standards. The committee will consist of the following gentlemen:—Lord Wenlock (chairman), Mr. George Barham, Mr. George Cowan, Major Patrick George Craigie, Mr. S. W. Farmer, Mr. Shirley Murphy, Prof. Thorpe, and Mr. J. Augustus Voelcker. Mr. R. H. Rew (of the Board of Agriculture) will serve as secretary to the committee.

WE regret to learn that Sir Thomas Grainger Stewart, the well-known Edinburgh physician, died last Saturday. He will be missed by a large circle of friends and pupils, who will find it difficult to replace their loss. Sir Thomas received his education, both scholastic and collegiate, in Edinburgh; at the completion of his medical curriculum he travelled abroad, and studied in Berlin, Prague, and Vienna. He gave during this time especial attention to medical pathology, and was fortunate to be in this branch of learning a pupil of Virchow and the veteran Rokitansky. The late professor's most important contribution to medical literature was the book published by him in 1868 on "Bright's Disease of the Kidneys." The book is a thorough and extensive description of the various renal affections comprehended under this term, with many plates illustrating, from cases under the author's observation, the pathological anatomy of this malady. Chemistry and physics, since the publication of this work, have shed considerable light upon the subject. The book also contains supplementary chapters upon other renal affections. In 1884 Prof. Stewart published a small work, entitled "An Introduction to the Study of the Diseases of the Nervous System," being the subject-matter of a course of lectures delivered by him. In 1888 Fasciculus II. of his clinical lectures on important symptoms, entitled "Albuminuria," appeared. This is a carefully written and instructive monograph, comprising several lectures, upon the varieties of albuminuria, the cause and clinical significance of this symptom. In 1893 an important clinical paper on "Grave's Disease" was published by Sir Thomas in the Edinburgh Hospital Reports. In 1882 Dr. Stewart was appointed Physician to the Queen in Scotland, and in 1894 received the honour of Knighthood, being nominated by Lord Rosebery. In addition, he received many honorary degrees from English and foreign universities and learned societies. He was frequently to be seen in an official capacity at congresses and medical reunions, and invariably shone in their environment. His private practice was large, and he will be greatly missed by many who owe to his care and skill their health and happiness. In Edinburgh he was active in connection with medical mission work, and this organisation will find it difficult to replace him.

THE death of M. Marion, professor in the faculty of sciences in Marseilles University, and director of the natural history museum there, was recently announced. M. Marion was a correspondant of the Paris Academy, in the section of anatomy of zoology. At Marseilles he gathered round him numerous students, and created interest in zoological researches. In the Endoume marine laboratory he investigated the organisms of the Gulf of Lions, and questions relating to pisciculture. He took part in all the dredging trips of the *Travailleur* and the *Talisman*, and collected much valuable material for study. The investigations made by his pupils and himself are described in the *Annales du Museum de Marseille*.

THE annual meeting of the Anthropological Institute was held on Tuesday, January 30. The treasurer's report showed an improved financial position, and an increased membership. The President, Mr. C. H. Read, delivered an address, in which he discussed the progress of anthropological studies during the year, with special reference to the problems which have been more especially subjects of discussion. He explained the prospects, and mode of working, of the proposed bureau of ethnology, and indicated the directions in which increased activity is to be expected or encouraged in the near future, concluding with an eloquent tribute to the memory of the late Sir W. H. Flower, one of the most valued supporters of the Institute, and a past president. The election of officers for 1900 resulted in the appointment of Mr. Read as president, Mr. A. L. Lewis as treasurer, and Mr. J. L. Myers as secretary.

THE Berlin correspondent of the *Standard* announces that the Royal Prussian Meteorological Institute in Berlin is about to make arrangements for the systematic examination of the higher strata of the atmosphere by means of special apparatus. In the grounds of the Aeronautical Observatory at Tegel—a suburb of Berlin where Alexander and William von Humboldt were buried—registrations of the atmospheric conditions at a height of three to five thousand metres will be carried on, if possible, day and night, with kites and kite-balloons. The registering apparatus, which automatically records the pressure, temperature, humidity, and wind velocity, at these heights, is taken up by a kite-balloon connected with the earth by piano wire. An elevation of four thousand five hundred metres has been attained by a train of kites even without balloons, when there was sufficient wind.

MR. W. H. MALLOCK has versified parts of Lucretius—the Roman poet of science—in the metre employed by FitzGerald in Omar Khayyâm's "Rubaiyat." The following two stanzas, which we quote from the *Academy*, bring to mind Tennyson's inspired lines on the same themes:—

> Globed from the atoms falling slow or swift
> I see the suns, I see the systems lift
>   Their forms; and even the systems and the suns
> Shall go back slowly to the eternal drift.
>
> Those blue and shining seas in delicate haze
> Shall go; and yonder sands forsake their place;
>   And where they are, shall other seas in turn
> Mow with their scythes of whiteness other bays.

THE *Photogram* directs attention to the fact that February 11 is the centenary of the birth of William Henry Fox Talbot,—the father of photography. To obtain for Talbot's work fuller recognition than is usually given, the *Photogram* has commenced the publication of a series of articles on the early history of photography. Our readers may remember that a proposal has been made, and has received some support, to restore the chancel of Lacock Church, Wiltshire, as a memorial to Fox Talbot. There is, at present, no other monumental record of him than a short inscription on his gravestone in the Lacock cemetery. Subscriptions in aid of the proposed memorial, the cost of which is estimated at 1000*l*, should be sent to Mr. C. H. Talbot, The Abbey, Lacock, Chippenham, or to the Fox Talbot Memorial Fund, Capital and Counties Bank, Chippenham.

THE proposal to generate electricity on the Canadian side of the Niagara and to sell electric power on the American side, has caused a flutter of excitement among American electricians. The New York *Electrical Review* states that the question has been raised whether foreign-made electricity is not subject to a duty of ten per cent *ad valorem* as an "unenumerated manufactured article." This question has produced a flood of debate, and while it is purely hypothetical as yet, the Merchants' Exchange of Buffalo and the Niagara Falls Power Company, have gone so far as to pass resolutions opposing such taxation. Those who desire discrimination in favour of home-made electricity argue that electric power is a vendable and valuable product of manufacture; that it can be measured easily and accurately, and that foreign-made electricity should pay duty equally with foreign-made cloth or wine. Those who believe in free trade in electricity point out that it is not an article, that it is not valuable or sold or saleable, that it has no power to do work, but only serves as a means of transmitting power, and that it is utterly impossible to import it because it instantly returns to its source.

AN address which Dr. H. R. Mill delivered before the Royal Geographical Society on Monday last, and which will no doubt appear in due course in the *Geographical Journal*, should be brought before the attention of every local scientific society. The subject was the geography of south-west Sussex, and the object was to show how the geological and topographical structures, the meteorological conditions, agricultural products, industries, and distribution of population are related to one another. With the Ordnance Survey maps as a basis, the district was subjected to minute geographical analysis, and many interesting connections were brought out. Geologically, the area examined is made up of the low-lying Tertiary clays, marls, sands, and pebble-beds on the coast, the chalk forming the South Downs a few miles behind, and the Greensand and Weald Clay north of it. As an example of the different characteristics and productive capacities of these three divisions, the following tabular statement is instructive:—

	Plain.	Hill.	Valley,
Average elevation	30 ft.	400	150
Formation	Tertiary	Chalk	Greensands
Rainfall	27 in.	36 in.	34 in.
Woodlands	4%	30%	20%
Pastures	26%	50%	48%
Arable land	60%	20%	32%
Wheat (bushels per acre)	40	35	36
Density of population (per square mile)...	400	10	200

The numbers are only approximate, but they serve to exhibit the chief differences between the three areas. The comparison suggests that, in this case at all events, the geology of the district is the controlling influence, but Dr. Mill pointed out that just as striking differences could be found in areas of a single geological formation, and that it was the function of geography to discover the causes, geological or otherwise, which produced them. His survey was a model which should inspire others to inquire into the causes of the relations between the natural and economic conditions of their own districts, and thus provide material with which to construct a geography of the British Isles on scientific lines.

A MEMOIR on the Geology of Belford, Holy Island, and the Farne Islands, by Mr. William Gunn, has just been issued by the Geological Survey. The region is one with which the late George Tate, of Alnwick, for long was intimately associated, until his death in 1871. The work of the Geological Survey was for the most part carried on subsequently, but there has unfortunately been considerable delay in the publication of the memoir. It deals mainly with rocks of Lower Carboniferous age, and contains a full account of the various coal-seams which have been worked in that series. Lists of Carboniferous fossils are given, and there are notes on the Whin Sill and on the Glacial and post-Glacial deposits.

ONE of the most gigantic sanitary works of the day was brought into operation at the beginning of January, when the water was turned into the great drainage canal through which in future the sewage of Chicago is to flow instead of into Lake Michigan, the source from which the city's water supply is drawn. This canal has been seven years in construction, and has cost about 6,000,000*l*. It is 29 miles in length, and has been excavated through glacial drift and solid rock, the width at the bottom through the rock being 160 feet and the depth 22 feet. The flow of water through the canal is to be regulated to 300,000 cubic feet a minute, and the volume of sewage will be 4,200 feet a minute. The constant depth of water in the canal is to be 22 feet, and the rate of flow is to be regulated so as not to exceed one mile an hour, and it has been constructed with the intention that it shall hereafter be used as a ship canal, rendering navigation possible from Lake Michigan, by way of the Illinois and Mississippi rivers, to the Gulf of Mexico. The watershed of this part of America is situated at the head of Lake Michigan, the water from which ultimately flows down the Saint Lawrence, and that to the south of the Lake by the Mississippi to the Gulf of Mexico. This diversion of the water and the question as to what effect it may have in lowering the level of the lake and so affecting the navigation and other water rights have been the subject of considerable discussion and investigation. The general opinion arrived at is that the quantity of water flowing down the canal cannot lower the water in Lake Michigan more than three inches.

THE passage of electricity through rarefied gases forms the subject of a paper by M. E. Bouty in the *Journal de Physique* for January. The author differs from Prof. J. J. Thomson's view (1893) that rarefied gases behave like electrolytes, and in this connection arrives by a different method at conclusions agreeing with those of E. Wiedemann. According to M. Bouty the conductivity of the gas is related in some manner to its luminosity. In studying the electrical properties of gases we have to consider (1) the dielectric equilibrium in the case of fields of force of less than a certain critical intensity; (2) the modifications produced by electric discharges due to a field exceeding the critical intensity; (3) the determination of the limits separating the two phenomena. The last of these points forms the subject of M. Bouty's present investigations.

THE Summary of the *Weekly Weather Report*, showing the rainfall and mean temperature for the year 1899, and for thirty-four years, 1866 to 1899, has recently been published by the Meteorological Council. The principal features during last year have been the small amount of rain in the summer months, and the high temperature that has persistently prevailed in most districts throughout the year. Over the British Isles generally, the deficiency of rainfall, compared with the mean of thirty-four years, only amounted to 0·6 inch; the greatest deficiencies were England E., 2·8 inches, Midland Counties, 2·6 inches, England S., 2·4 inches, England N.W., 2·9 inches, England S.W., 3·8 inches. In Scotland N., there was an excess of 6·9 inches, Scotland W., 6·3 inches, and in the east of Scotland and south of Ireland there was also an excess of 2¾ inches. In the south of England the rainfall has been below the average during the last five years. The excess of temperature was greatest over the southern portion of the kingdom, although in the northern districts it was also considerable; in the neighbourhood of London the temperature was nearly 2° above the average of fifty years (1841–90). For the British Isles generally, it has been above the mean during the last seven years, with the exception of 1895, in which, it will be remembered, the prolonged frosts of January and February occurred. There was an excess of sunshine over the whole country; in the south of England it amounted to about 350 hours.

WE have received the Report of the Northumberland Sea Fisheries Committee for 1899, in which two points seem worthy of special notice. In regard to flat-fish, the Report shows the gratifying state of affairs that an increase took place during the first five years that trawling excursions were instituted, and that the numbers of fish has since remained fairly constant. It is quite true that the increase has not been as large as was expected. But what has been learnt in regard to the spawning migrations affords the required explanation; and there is no doubt that the protection extended to the immature fish, as well as to their adult brethren which spend a portion of their lives in-shore, justifies the closure of the territorial waters to trawling. If such were again permitted, the destruction of immature fish in off-shore waters would be intensified, while the in-shore fish would be practically exterminated. The second point is the advisability of establishing on different parts of the coast beds of mussels for use as bait.

THE anatomy and development of Reptiles receive a large share of attention in part i. vol. xxviii. of the *Morphologisches Jahrbuch*; Dr. E. Göppert, of Heidelberg, contributing a paper on the larynx, while Herr H. K. Corning writes on development of the muscles of the head and limbs. Both papers are of a highly technical nature.

THE *Morphologisches Jahrbuch* also contains the first instalment of an important memoir by Dr. S. Paulli on the pneumaticity of the mammalian skull, as developed in the olfactory region, this part dealing only with Monotremes and Marsupials. It is shown that whereas in the Australian Duckbill the porous (ethmoid) bones in the nasal chamber are so slightly developed that there is not even a division between the olfactory and the respiratory portions, in the Echidna the same structures attain an extraordinary degree of complexity and specialisation. The difference is doubtless due to the aquatic habits of the one animal as compared with the terrestrial mode of life of the other.

THE greater portion of the first part of vol. lxvii. of the *Zeitschrift für Wissenschaftliche Zoologie* is taken up by an elaborate memoir on the structure and development of the crystalline lens of the eye in Mammals, by Herr C. Rabl, of Prague.

APPENDIX IV. for 1899 of the *Kew Bulletin of Miscellaneous Information* consists of a classified catalogue of the additions to the library received during the year 1898, covering fourteen pages.

A SERIES of articles on "Present-Day Leaders of Science" is running through *Good Words*. The January number contained an appreciation of Lord Kelvin, by his successor at Glasgow, Prof. A. Gray; and in the February number, Prof. Ramsay's scientific investigations—especially those referring to argon, helium, and other gases recently isolated—are described by Prof. Dobbie.

MR. C. L. WRAGGE writes to us with reference to the weather charts of Australasia issued by him, and mentioned in a note in our issue of November 9, 1899 (p. 40). He informs us that "the charts are regularly published daily, Sundays and holidays excepted, and are thus kept up to date. They are afterwards lithographed for general circulation within three days of the original issue. . . . Although the isobars are extended seawards, and the dotted lines over north-western Australia, where, except along the north-western coast, or data are limited, long series of observations over the land in connection with data from the Northern Territory, Tasmania, New Zealand and New Caledonia, prove that they closely approximate to the truth, and ship's logs repeatedly confirm the oceanic contouring of the isobaric lines."

Science Abstracts has become indispensable to all who wish to keep in touch with the progress of work and thought in any branch of physical science, whether pure or applied. The number for January, with which is issued the index to last year's volume, excels all previous ones both in the extent and interest of the information given as to recent advances of knowledge. It consists of 168 pages of abstracts of scientific papers, concisely written and well arranged. The scope of the journal has been considerably extended, more especially in the direction of steam plant, gas engines, oil engines, and motor cars. The practical man, as well as the student and investigator, cannot afford to neglect such a serviceable publication. The publishers are Messrs. E. and F. N. Spon, Ltd.

THE development of the practical teaching of physics has led to the production of simple apparatus and cheap materials by several scientific instrument makers. Messrs. J. J. Griffin and Sons have just published a catalogue, which shows they have adapted themselves to the new conditions. The catalogue contains classified price-lists of apparatus and materials described in several text-books of general elementary science and practical physics, and also required for the teaching of physiography, and for the complete equipment of a physical laboratory and lecture-room in a School of Science or other institution in which a systematic course of instruction in science is given. The catalogue should secure the attention of teachers who already possess laboratories, as well as of those making arrangements for experimental work by students.

SOME years ago Bernthsen published experiments to show that hyposulphurous (or hydrosulphurous) acid had the formula $H_2S_2O_4$ and not H_2SO_2. Though the evidence on which this conclusion was based has never been contradicted, the formula has not obtained general currency, and some doubt has lately been thrown upon it. Bernthsen has, therefore, returned to the subject, and, in conjunction with M. Bazlen, publishes, in the current number of the *Berichte*, an account of the preparation of crystallised sodium hyposulphite. The salt was prepared by taking sodium bisulphite, zinc dust, and sulphur dioxide in quantities corresponding to the following equation:—

$$2NaHSO_3 + Zn + SO_2 = (Na_2S_2O_4 + ZnSO_3) + H_2O.$$

Milk of lime is added to the solution to precipitate the zinc and the sulphites, and on adding common salt to the solution, sodium hyposulphite is salted out. Analysis and other evidence show the crystallised salt to have the formula $Na_2S_2O_4 + 2H_2O$. The original view of Bernthsen is thus established, and hyposulphurous acid must be held to correspond in its stage of oxidation to the oxide S_2O_3.

Although but a short time has elapsed since the discovery of the elements radium and polonium by M. and Mme. Curie, a considerable amount of work has already been done upon the properties of the rays emitted by these substances. M. Henri Becquerel has already shown that there is a fundamental difference between the rays emitted by polonium and radium, in so far as a portion of the radium rays are deviated by a magnet. In the current number of the *Comptes rendus* is a further contribution by M. Becquerel on this same subject, in which, after showing that the deviation is the same in air and *in vacuo*, by an ingenious arrangement it is shown that the rays given off by different preparations are similar in nature, differing only in intensity. The salts were placed in small leaden cups upon a sensitised plate wrapped in black paper, and isolated from each other by screens, no effect being produced upon the plate until the magnetic field was excited. In a strong field the radiation is bent down on to the plate, which, when developed, showed that the deviations were equal, although of different intensity.

The exact value for the atomic weight of nitrogen, in spite of its importance, is still liable to some uncertainty. The mean value derived from the researches of Stas, Penny, Marignac, Pelouze and Hibbs, by methods exclusively chemical, is 14·034 (oxygen = 16); whilst the value calculated from the practically identical densities of Lord Rayleigh and Leduc is 14·006. The February number of the *Journal* of the Chemical Society contains further work on this subject by Mr. G. Dean. Silver cyanide was obtained in a state of great purity, and the ratio Ag : AgCN determined, from which the value 14·031 is deduced for the atomic weight of nitrogen, a number practically identical with the mean above quoted, 14·034. Further work is clearly necessary to explain this considerable discrepancy, nearly 0·2 per cent., between the results obtained by physical and chemical methods.

The additions to the Zoological Society's Gardens during the past week include two Common Marmosets (*Hapale jacchus*) from South-east Brazil, presented by Mrs. Nigel Cohen; a Black-eared Marmoset (*Hapale penicillata*) from South-east Brazil, presented by Mr. Hamilton Coffey; a Rhesus Monkey (*Macacus rhesus*) from India, presented by Dr. R. Cox; a Small Hill-Mynah (*Gracula religiosa*) from Southern India, presented by Mr. W. Brindley; two Dwarf Chameleons (*Chamaeleon pumilus*) from South Africa, presented by Mr. H. Way; a Lesser White-nosed Monkey (*Cercopithecus petaurista*, ♂) from West Africa, an American Bison (*Bison americanus*, ♂) from North America, two Great Anteaters (*Myrmecophaga jubata*, ♂ ♀), a Blue-fronted Amazon (*Chrysotis aestiva*) from South America, deposited; a Hog Deer (*Cervus porcinus*, ♂) born in the Gardens.

OUR ASTRONOMICAL COLUMN.

Comet Giacobini (1900*a*).—A telegram, received February 3, from the Centralstelle at Kiel, announces the observation of this comet by M. Javelle, at the Nice Observatory, in the following position:—

R.A. 2h. 57·7m. } 1900 January 31d. 7h. 3m.
Decl. −7° 55′ } Nice Mean Time.

A later telegram, received February 4, gives the following position:—

R.A. 2h. 49m. 51s. } 1900 February 3d. 7h. 25·8m.
Decl. −6° 40′ 10″ } Nice Mean Time.

Daily motion in R.A. = −2·6s.
" " " Decl. = −25″.

The comet, when discovered, was about 2° north-east of the 4th magnitude star η Eridani, and according to its observed motion is at present following a north-westerly path through Cetus.

Second New Algol Variable in Cygnus.—It is announced, in the *Astronomische Nachrichten*, No. 3614, that Madam Ceraski, of the Moscow Observatory, has detected another variable during the examination of plates taken at the Observatory by M. Blajko. From the light variation observed, it is considered to be of the Algol type. Its position is the following:—

		R.A.				Decl.	
		h.	m.	s.		°	′	″
1855·0	...	19	40	59·7	...	+32	21	6
1900·0	...	19	42	43·4	...	+32	27	34

The period is calculated to be

6d. 0h. 9·4m.;

an epoch of minimum being

1899 December 15d. 23·3h. Greenwich Mean Time.

The normal magnitude of the variable is 10, its value at the minimum being about 12.

A small chart of the neighbouring stars is given in the paper to facilitate its recognition. The star makes almost an equilateral triangle with the stars B.D. 32°·3559, and B.D. 32°·3560.

The Computation of Occultations.—There is a considerable number of methods for calculating the times of occultations, and until quite recently that of Bessel was the most generally employed. In these computations, in order to obtain results accurate to some seconds of time, the values resulting from the first calculations were only taken as a first approximation and used as a basis for a second computation, which latter gave the times with greater precision. In the year 1896 Dr. Carl Stechert published a new method (*Tafeln für die Vorausberechnung der Sternbedeckungen*) which dealt directly with the apparent and not the true time of conjunction, and at the same time allowed of certain simplifications being made. Curiously enough we have received from the Director of the Observatory of Rio de Janeiro, Mr. L. Cruls, a description of a method which results in an equation similar to that obtained by Dr. Stechert, but obtained by a line of reasoning essentially different. This method, which only involves one computation, and is based on the exact knowledge of the instant of the apparent conjunction of two stars, is fully described in the publication referred to, the text being arranged in parallel columns in the Spanish and French languages. The accuracy of this method may be gauged from the results of ten computations compared with the observed values. The mean error of a single isolated observation was found to be ± 11s·5 while that of the whole of the sixteen observations (including immersions and emersions) was ± 3s. The method is accompanied by numerous tables and diagrams for facilitating the reductions of equations involved.

Light Curve of Ceraski's First Algol Variable.—In the *Astronomical Journal*, No. 475, Mr. J. A. Parkhurst gives the results of forty-five observations of this variable during the period 1899 June 15 to September 12. Comparisons with four neighbouring stars give the normal magnitude as 8·75, and the minimum as 11·4. Forming the light curve from the observed times and magnitudes, the epoch of an August minimum was found to agree more closely with Prof. E. C. Pickering's value (*Harv. Coll. Obs. Circular*, No. 44) than with that of Prof. Ceraski, so that the author supports Prof. Pickering's extension of the period to 4d. 13h. 45m. 2s.

Reduction of Star Photographs.—Mr. A. R. Hinks, who has recently undertaken the work of stellar photography with the new photographic equatorial refractor at the Cambridge Observatory, discusses, in the *Astronomical Journal*, No. 475, the method he proposes to adopt in the reduction of the plates. The telescope is to be devoted to determinations of stellar parallax, measures of star clusters, &c., and it is important for the ultimate value of the work that the measures as published should be comparable with others obtained elsewhere. Of the many possible methods of reduction, the author considers it most advisable to adopt a system based upon that devised for the work of the Astrographic Catalogue by Prof. H. H. Turner (*Monthly Notices*, *R.A.S.*, 1894, vol. liv. p. 489). In thus publishing the measures in the rectangular co-ordinates from the plates themselves, there may be some doubt as to their being comparable with older work published in the usual spherical